Studies in Indian Phyllachoraceae III.

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With 3 Textfig.

Since the publication by Tilak (1958, 1959) of his two contributions to Indian *Phyllachoraceae,* the writer made several collections of these interesting tar-spot fungi during the cold weather of 1961—62 from hill stations of Bombay, Maharashtra, where these fungi are of common occurrence. Some of these collections were found to be new to science and others new record either on the basis of host or occurrence. This paper, the 3rd in the series, presents an account of two new species and one new record of *Phyllachora.* The characteristics of this historical genus as described in this paper agree with the normal pattern as originally defined by Petrak (1924), Orton (1924, 1944) and subsequently confirmed by Miller (1949) in respect of internal structure of Ascocarp and its location in the host tissue.

1. **Phyllachora mahableshwarensis** S. Ananthanarayanan sp. nov. Fig. 1.

Maculae amphigenae, laxe vel laxissime dispersae, primum obscure brunneae, postea expallescentes, tandem ochraceae, orbiculares vel ellipticae, saepe sinuosae et obtuse angulosae, tunc plus minusve irregulares, quoad magnitudinem variabiles, plerumque 1—15 mm diam; perithecia, ut videtur, semper epiphylla, per totam macularum superficiem laxe vel subdense dispersa, plerumque 6—8 in quaque macula, solitaria, raro 2—3 subaggregata, omnino iunata, ellipsoidea vel anguste ovoidea, 345—475 μ alta, 194—275 μ lata, clypeo omnino destituto vel indistincte evoluto, ostiolo crassiuscule conico, intus dense periphysato punctiformiter erumpentia; pariete membranaceo, pseudoparenchymatico, plerumque e stratis 3—4 cellularum plus minusve compressarum, irregulariter angulosarum composito; asci sat numerosi, cylindracei, antice late rotundati, postice plus minusve attenuati, in stipitem brevem transeuntes, tenuiter tunicati, 8-spori, 172—202/8,5—13 μ; sporae plerumque monostichae, raro incomplete distichae, ellipsoideae vel. oblongo-ovoideae, continuae, hya-

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linae, rectae, raro inaequilaterae, 13—16/5,5—8,5 µ, episporio tenui; paraphyses numerosae, filiformes pluriseptatae, ascos vix vel parum superantes, postea mucosae.

In foliis vivis *Embeliae viridiflorae* Scheff. — India; ad Mahableshwar XII. 1962 leg. S. Ananthanarayanan. M. A. C. S. Herb. No. 156 (Typus).

Two species of *Phyllachora* have been so far described on species of *Embelia* by von Höhnel (1920) both from Java viz. *P. embeliae* and *P. secunda* on *Embelia pergamina* A. DC. and *Embelia ribes*

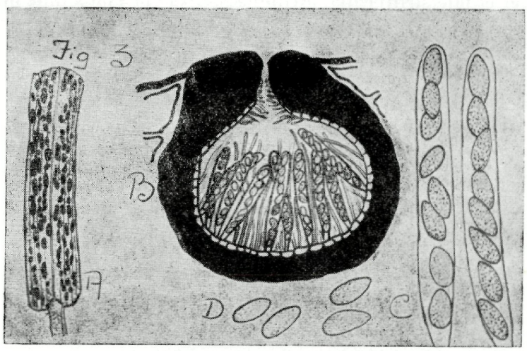

Fig. 3. *Phyllachora fallax* Sacc. — A. Habit. $^1/_2$ nat. B. Section through stroma showing perithecium ×62. C. Ascus. ×291. D. Ascospores ×291.

Burm. respectively. Since the Indian species has been collected on a different species of *Embelia,* a comparative study was undertaken between this and the two previously described species with the following results:

Table 1.

Comparison between species of *Phyllachora* occuring on species of *Embelia.*

Species	Perithecia	Asci	Ascospores
P. embeliae v. H.	300 µ	65—80×8—9 µ	8—10×6-7 µ
P. secunda v. H.	—	96×8—10 µ	12—14×8—9 µ
P. mahablesh-warensis, n. sp.	345—475 × 194—275 µ	172—202× 8,5—13,0 µ	13—16×5,5— 8,5 µ

The Indian collection is thus significantly distinct from the two previously described species in respect of dimensions of perithecia asci as well as ascospores besides being parasitic on a hitherto unreported species of *Embelia* and has, therefore, been accommodated in a new taxon.

The species is described after the famous hill-station, Mahabaleshwar, where the genus is particularly wide-spread and of common occurrence.

2. **Phyllachora themedae** S. Ananthanarayanan sp. nov. Fig. 2.

Maculae nullae; stromata irregulariter laxe vel subdense dispersa, solitaria vel bina complurave seriatim disposita, tunc plus minusve aggregata et connata vel omnino confluentia, plerumque amphigena, minora saepe in epiphyllo tantum conspicua, ambitu anguste elliptica vel breviter et late striiformia, utrinque obtusa vel saepe plus minusve

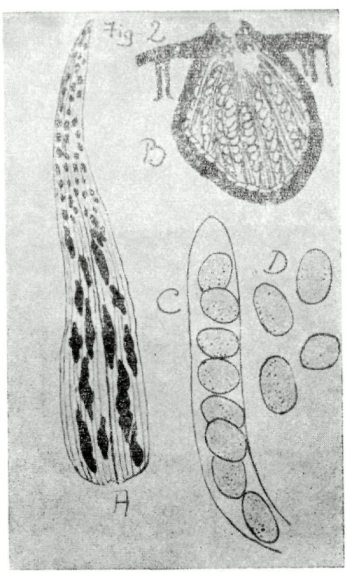

Fig. 2. *Phyllachora themedae* S. Ananth. — A. Habit. $^1/_2$ nat. B. Section through stroma shewing perithecium. ×65 C. Ascus. ×283. D. Ascospores ×283.

attenuata et acuminata, distincte marginata, sub lente ad latera saepe minutissime sinuosa et denticulata, vix vel parum et plerumque tantum in epiphyllo leniter prominula, quoad magnitudinem variabilia, 1—6 mm longa, 1,5—2,5 mm lata, raro et saepe confluendo tantum etiam majora, atra, non vel vix nitidula; stromatis contextu in mesophyllo sub et inter perithecia evoluto, pseudoparenchymatico, e cellulis rotundato-angulosis, ca 5—7 μ diam. metientibus saepe elongatis, tunc usque ad 10 μ longis et distincte verticaliter ordinatis, sub-

hyalinis vel pallide brunneolis, pro ratione crassiuscule tunicatis composito; clypeo epidermali plerumque in epiphyllo tantum evoluto, 30—40 μ, in hypophyllo 15—20 μ crasso, subcarbonaceo, pseudoparenchymatico, in cellulis nonnullis interdum etiam hyphoideo, fere opace atro-brunneo; perithecia unistratosa, in mesophyllo evoluta, globosa vel ovoidea, e mutua pressione saepe plus minusve applanata et irregularia, 258—301/170—215 µ, ostiolo papilliformi vel obtuse conico, poro irregulariter rotundato, ca 15—20 μ lato perforato erumpentia, nec prominula; pariete 8—12 μ, raro usque ad 15 μ crasso, pseudoparenchymatico, 3—4—stratoso, e cellulis irregulariter angulosis, vix vel parum compressis, pellucide olivaceis, 6—10 μ diam. metientibus composito; asci cylindracei vel clavato-cylindracei, antice rotundati vel parum, postice plus minusve attenuati, subsessiles vel breviter stipitati, tenuiter tunicati, 150—172/15—19 µ; sporae monostichae, ellipsoideae vel ovoideae, rectae, raro inaequilaterae, utrinque late rotundatae, hyalinae, plasmate laxe et minutissime granuloso farctae, 21.5—25.8/13—15 µ; paraphyses numerosae, fibrosae, mox mucosae.

In foliisvivis *Themedae tremulae* Hack. India; Bombay: at Purandhar IX—X. 1961/62 leg. S. Ananthanarayanan. M. A. C. S. Herb Nr. 167 (Typus).

Incitat maculas piceas in foliis viventibus *Themedae tremulae* Hack., leg. S. Ananthanarayanan ad Purandhar, in ditione Bombay, in India mensibus sept.-Oct. 1961 and 1962. M. A. C. S. Herb. No 167 (Type).

The above species collected on *Themeda tremula* Hack. was critically examined and compared with the two wide spread and common species described from the grass hosts viz *P. graminis* (Pers. ex Fr.) Fuckel and *P. cynodontis* (Sacc.) Niessel and found to be morphologically distinct i nall characters, specially in having longer and broader asci and significantly bigger ascospores, as shown in the following table.

Table 2.

Comparison between species of *Phyllachora* occuring on grass hosts.

Species	Host	Perithecia	Asci	Ascospores
P. graminis Fuck.	*Gramineae*	—	78—80 × 7—8 µ	8—12 × 4—5 µ
P. cynodontis Niessl	*Cynodon dactylon*	—	65—75 × 12—15 µ	8—12 × 5—6 µ
P. themedae n. sp.	*Themeda tremula*	258—301 × 172—215 µ	150,5—172 × 15—19 µ	21,5—25,8 × 13—15 µ

3. *Phyllachora fallax Sacc.* (Fig. 3).

Infection spots epiphyllous, tar-like, scattered to aggregated, often coalescing, raised, waxy, black, 0.5—2 cms. Perithecia flask-shaped,

3—5 per infection spot, ostiolate with a narrow neck and clypeus, deeply embedded in the mesophyll even extending upto lower epidermis, 239.5—473 × 131.5—324 μ. Asci paraphysate, cylindrical narrowing towards base, and round at apex, thin-walled, 8-spored, 70—90 μ — 116×8.6—10.65 μ. Periphyses and paraphyses are present. Ascospores hyaline, 1-celled, thin walled, Ovoid to elliptical, uniseriate, 10—16—23 × 6—8 μ.

Incites tar spots in the living leaves of *Chrysopogon montanus* Trin. (=*Andropogon monticola* Schult.) Collected by S. Ananthanarayanan at Khandala, Poona in Nov.-Dec. 1962. M. A. C. S. Herb. No. 168.

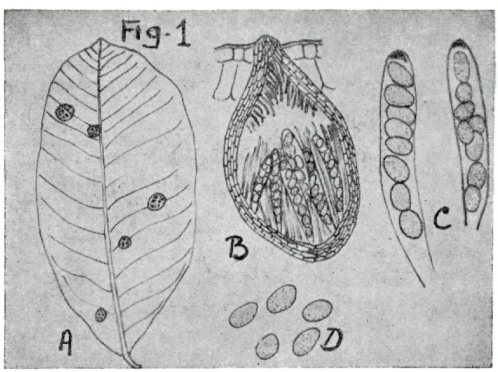

Fig. 1. *Phyllachora mahableswarensis* S. Ananth. — A Habit: ½ nat. B. Section through stroma showing perithecium ×54 C. Ascus ×234 D. Ascospores ×234.

The three species are being deposited in the Herbaria at Indian Agricultural Research Institute, New Delhi, India, and Commonwealth Mycological Institute, Kew, England, besides the herbarium of this Institute under the Nos. 156, 167 and 168.

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